

DNA QIACUBE TIGHTNESS TEST & REPLACEMENT OF TIP ADAPTER RING

A. SCOPE

- A.1 The tightness test is performed to check whether the tightness of the pipetting system, including the attached pipetting tip, is sufficient. The visual inspection of the QIAcube tip-adapter ring will be performed monthly and replaced approximately every six months or as needed.

B. QUALITY CONTROL

- B.1 Protective gloves, scrubs, a lab coat, and a mask must be worn at all times when performing this procedure to prevent contamination.
- B.2 Do not use spray bottles to spray cleaner onto surfaces of the QIAcube workstation.
- B.3 Do not use alcohol or alcohol-based solutions to clean the QIAcube door. Clean the QIAcube door with distilled water.
- B.4 Do not submerge buffer bottles in 70% ethanol as the blue ring is not alcohol resistant.
- B.5 To clean touch screen, moisten a soft lint-free cloth with water or ethanol and carefully wipe display. Wipe dry with a paper towel.
- B.6 Do not use bleach, solvents, or any reagents containing acids, alkalis, or abrasives to clean the QIAcube and its accessories. Use DNA Exitus Plus.

C. SAFETY

- C.1 Protective gloves, scrubs, a lab coat, a mask, and eye protection (e.g. safety glasses or a face shield) must be worn at all times when performing this procedure.

D. REAGENTS, STANDARDS AND CONTROLS

- D.1 Absolute Ethanol (200 proof)

E. EQUIPMENT

- E.1 Equipment
- E.1.1 QIAcube
- E.1.2 QIAcube Tip Adapter Ring tool
- E.1.3 QIAcube set of O-rings (9018472)
- E.2 Supplies
- E.2.1 QIAcube sample tubes RB (2 mL, Qiagen P/N 990381)
- E.2.2 QIAcube Filter Tips, sterile aerosol-resistant
- E.2.3 Disposable gloves

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- E.2.4 Mask
- E.2.5 Lab coat
- E.2.6 Eye protection (e.g. safety glasses or a face shield)
- E.2.7 DNA Exitus Plus

F. PROCEDURES

QIACube Tightness Test

- F.1 Load an empty 2 mL RB sample tube in position 1 of the shaker.
- F.2 Fill a reagent bottle with 200 proof ethanol and place in position 1 of the reagent bottle rack.
- F.3 Load a tip rack of the filter tips you want to test (1000 µl or 1000 µl wide-bore) into the QIACube. Close the QIACube door.
- F.4 Make sure that the QIACube is switched on.
- F.5 In the main menu, press "Tools".
- F.6 Select "Maintenance" by pressing "▲" or "▼" to scroll through the list until it is highlighted, and then press "Select".
- F.7 Select "Tightness Test" by pressing "▲" or "▼" to scroll through the list until it is highlighted, and then press "Select".
- F.8 Select the appropriate type of filter-tips ("1000 µl") by pressing "▲" or "▼" to scroll through the list until it is highlighted, and then press "Select".
- F.9 Press "Start" to start the tightness test with the selected type of filter-tips.
- F.10 Follow the instructions displayed on the touchscreen, and press "Start" to start the tightness test.
 - F.10.1 After the load check, the robotic arm will pick up a tip, aspirate ethanol, and move to the tube. The tip will remain in place above the tube for 2 minutes. The tip will then be discarded into the waste drawer.
- F.11 After the protocol is complete, open the QIACube door and check if the tube contains liquid. If the tube is still empty and dry, the tightness of the pipetting system is adequate. If you find liquid in the tube, proceed to steps F.14-F.28 to replace the o-ring and then repeat the tightness test.
- F.12 If the QIACube passes, save the run data to the USB thumb drive attached to the QIACube.
 - F.12.1 Select "Tools" by pressing "▲" or "▼" to scroll through the list until it is highlighted, and then press "Select".
 - F.12.2 Select "Data Exchange" by pressing "▲" or "▼" to scroll through the list until it is highlighted, and then press "Select".

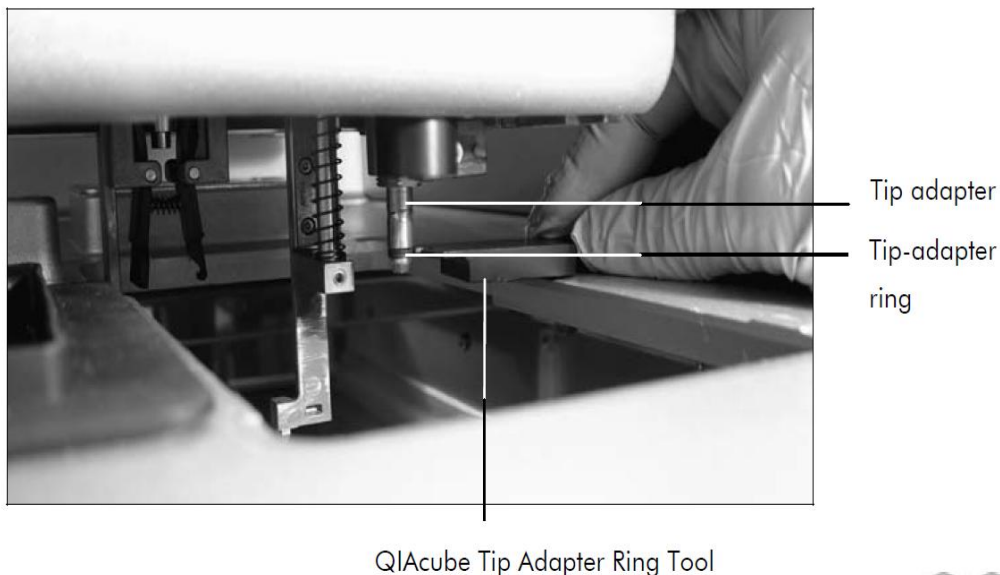
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- F.12.3 Select "Save all files" by pressing "▲" or "▼" to scroll through the list until it is highlighted, and then press "Select".
- F.12.4 Press "OK" to begin saving the data to the USB thumb drive.
- F.12.5 Find the newest run data file (the largest number) from the "REPORT" folder in the respective QIAcube serial number folder.
- F.12.5.1 QIAcube #1: S/N# 6980
- F.12.5.2 QIAcube #2: S/N# 7909
- F.12.5.3 QIAcube #3: S/N# 7918
- F.12.5.4 QIAcube #4: S/N# 7920
- F.12.6 For each QIAcube, open the run data file, and add the following information to the top of the document:
- Date (mm/dd/yyyy)
- Performed by: _____
- F.12.7 Save the document as a .txt file for each QIAcube in their respective folder in tightness test folder. Name the file as such:
- Today's date and initials
- F.13 Print the tightness test run data for each QIAcube and place them in the respective sections of the "QIAcube Maintenance" binder.

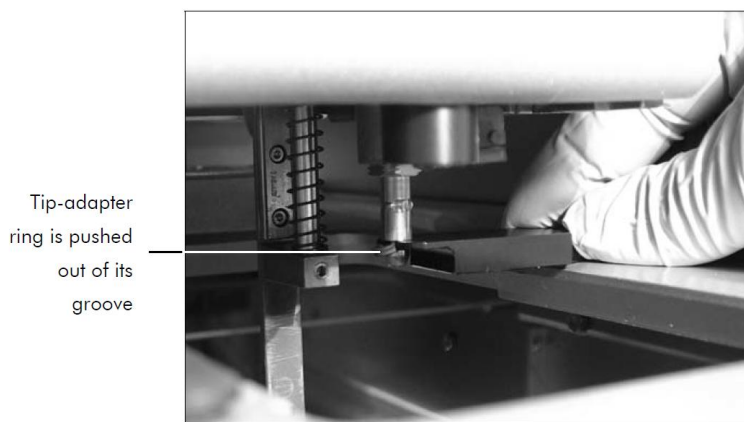
Visual Inspection and Replacement of QIAcube Tip-Adapter Ring

- F.14 Remove the waste drawer and the labware tray and close the QIAcube door.
- F.15 Press "Tools" in the main menu.
- F.16 Select "Maintenance" by pressing "▲" or "▼" to scroll through the list until it is highlighted and then press "Select".
- F.17 Select the protocol "Cleaning position" by pressing "▲" or "▼" to scroll through the list until it is highlighted and then press "Start". The robotic arm will move forwards and downwards enabling the tip adapter to be accessed through the opening of the waste drawer (See picture below). Open the QIAcube door when the robotic arm has stopped moving.

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- F.18 Inspect the o-ring for any tears. If the o-ring looks good, this procedure can be stopped at this point by clicking cancel on the display. O-ring replacement is described in the following steps.
- F.19 Using your right hand, place the QIACube Tip Adapter Ring tool on the QIACube worktable to the right of the opening for the waste drawer.
- F.20 Push the ring tool against the tip-adapter ring until the ring is displaced out of its groove. Use your left hand to steady the robotic arm (see picture below).

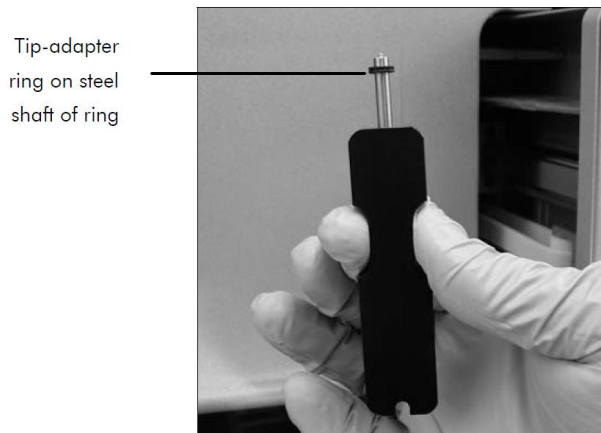


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- F.21 Place your left hand into the opening of the waste drawer and, using your thumb and index finger, carefully slide the tip-adapter ring down off the tip adapter (see picture below) .

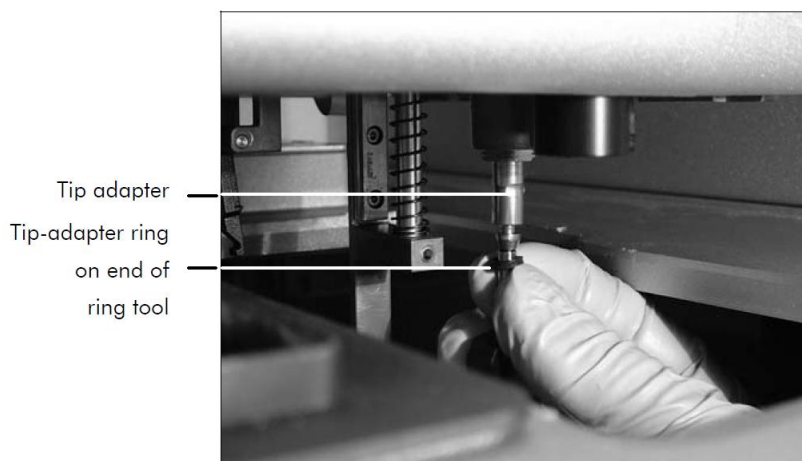


- F.22 Place the new tip-adapter ring onto the end of the steel shaft at the other end of the QIACube Tip Adapter Ring Tool (See picture below).

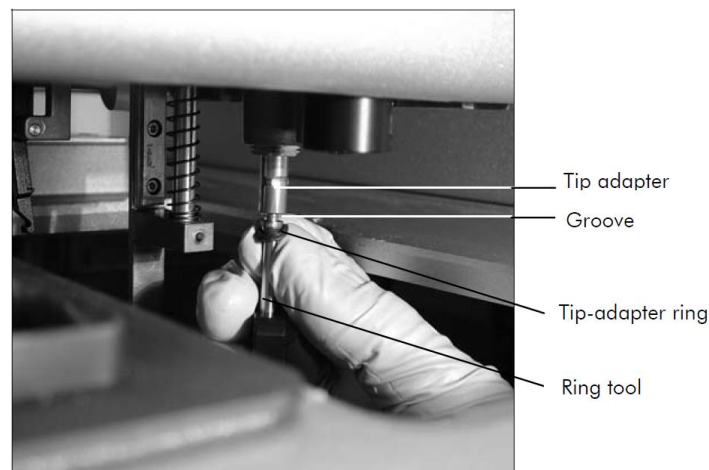


- F.23 Using either your left or right hand, place the ring up through the opening for the waste drawer so that the end of the steel shaft is centered in the opening of the tip adapter.

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- F.24 Using the thumb and index finger of the hand that is holding the ring tool, carefully slide the tip-adaptor ring up onto the tip adapter and into the groove.



- F.25 Make sure the tip-adaptor is centered in the groove. Check that the ring can be gently rotated and is not twisted.
- F.26 Close the QIAcube door.
- F.27 Press "Cancel" and confirm twice with "OK".
- F.28 Run the protocol to test the tightness of the pipetting system (F.1-F.13 of this procedure) as a performance check. If the tightness test fails, check the o-ring to ensure that it is correctly seated in the groove. Repeat the tightness test and if this test fails again, the QIAcube will be removed from service and Qiagen technical support will be contacted.
- F.29 Document on the tightness test printout(s) that the o-ring was either visually checked or changed.

G. INTERPRETATION GUIDELINES

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Not applicable

H. REFERENCES

H.1 QIAcube user manual, Qiagen, 06/2008

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